CALFED
BAY-DELTA
PROGRAM

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Attachment 2

The Resources Agency of California

Cal/EPA

September 3, 1996

The Honorable Pete Wilson
Governor, State of California
Office of the Governor
State Capitol
Sacramento, CA 95814

The Honorable Bruce Babbitt
Secretary of the Interior
Department of the Interior
MS 6229 MIB
1849 C Street N.W.
Washington, DC 20240

Gentlemen:

CALFED AGENCIES CONCLUDE PHASE I: IDENTIFICATION OF APPROPRIATE RANGE OF SOLUTION ALTERNATIVES

Two years ago representatives of the undersigned Federal and State agencies committed to work cooperatively to develop a long-term solution to the problems affecting the San Francisco Bay-Sacramento/San Joaquin River Bay-Delta system. In the spring of 1995, the agencies established the CALFED Bay-Delta Program as the comprehensive, long-term planning effort to address the resource problems of the Delta. The objective of this cooperative effort is to identify solutions to problems of ecosystem quality, water supply reliability, water quality, and vulnerability of Delta levees and channels to natural disasters. Through the CALFED Bay-Delta Program, the State and Federal agencies have now completed the first of a three-phase process by identifying a reasonable range of alternatives to undergo detailed analysis in the environmental review processes of Phases II and III.

The CALFED Bay-Delta Program developed by the Federal and State agencies fully acknowledged that the eventual success of the effort to develop a lasting solution for the Bay-Delta system depended upon the full and equal involvement of all interested parties in a collaborative process. The process was designed to make full use of existing information and documents that were the products of previous State, Federal and stakeholder efforts. In addition, the agencies have designed the process to

develop a Bay-Delta solution so as to address fundamental problems of the system in a comprehensive manner, and to address problems and objectives that were most important to the vitality of the Bay-Delta ecosystem. Finally, the agencies intend the process to result in solutions of manageable scope that will be implementable.

The agencies designed the Phase I process to identify alternatives intended to improve the Bay-Delta ecosystem. The extent and magnitude of improvement will be identified in Phase II. The process provided for equal involvement among all interest groups, open communication and innovative thinking, and fostered consensus and cooperation. Finally, the process incorporated much of the existing information already available and combined different actions to provide integrated solutions which ultimately will ensure the health and productivity of the Bay-Delta ecosystem.

Phase II will include alternative refinement, preparation of a Programmatic environmental impact report and statement (EIR/EIS), and development of implementation strategies. The Draft Programmatic EIR/EIS is to be released by Fall 1997 with a Final Programmatic EIR/EIS to be released by Fall 1998. Phase III will include project-level environmental review and subsequent implementation.

Phase I consisted of a step-by-step development program. Each step was based upon the work of the staff and management of the CALFED agencies, input from the public workshops and meetings, involvement of the Bay-Delta Advisory Council, suggestions from many interest groups, and a variety of other public involvement efforts. The Phase I steps included:

Step 1. Defining the problem for the four resource components - ecosystem quality, water quality, water supply and levee and channel vulnerability;

Step 2. Developing preliminary objectives, mission and scope;

Step 3. Identifying potential actions which could become part of the alternatives;

Step 4. Crafting solution strategies which ensure that problems are addressed in each of the four resource areas in an equitable, comprehensive and linked manner;

Step 5. Identifying preliminary alternatives; and

Step 6. Refining alternatives.

This process culminated in development of three preliminary alternatives that will be refined through Phase II and analyzed in a Programmatic EIR/EIS. As a result of the Phase I process,

each alternative consists of variable components related to water storage and Delta conveyance. Each alternative also contains common programs related to water use efficiency, water quality, system vulnerability, and ecosystem quality. The common programs will vary by alternative, but are intended to achieve the same goals. Each alternative is fully set forth in the CALFED Bay-Delta Program's Phase I Completion Report. A summary of the alternatives follows:

No project/No action alternative.

Alternative 1. This alternative includes common programs for extensive levels of water use efficiency, water quality improvements, levee and channel system integrity, and ecosystem restoration. The system conveyance component will use the existing system and channel configuration with limited or no modifications to that system. This alternative will also include a storage component in which a range of storage variables will be designed to complement the other components. The range of storage options to be considered include everything from no additional storage to some combination of North of Delta, South of Delta, and/or in-Delta surface storage, as well as conjunctive use/groundwater banking.

Alternative 2. This alternative includes common programs for extensive levels of water use efficiency, water quality improvements, levee and channel system integrity, and ecosystem restoration. The system conveyance component will include a variety of modifications to Delta channels in order to increase the conveyance efficiency. This conveyance component is referred to as a through-Delta system. This alternative will also include a storage component in which a range of storage variables will be designed to complement the other components. The range of storage options to be considered include everything from no additional storage to some combination of North of Delta, South of Delta, and/or in-Delta surface storage, as well as conjunctive use/groundwater banking.

Alternative 3. This alternative includes common programs for extensive levels of water use efficiency measures, water quality improvements, levee and channel system integrity, and ecosystem restoration. The system conveyance component will include a combination of improved through-Delta conveyance and conveyance isolated from Delta channels. This alternative is referred to as a dual system. In addition, a fully isolated facility with no through-Delta conveyance component will be analyzed as part of this alternative. This alternative will also include a storage component in which a range of storage variables will be designed to complement the other components. The range of storage options to be considered include everything from no additional storage to some combination of North of Delta, South of Delta, and/or in-Delta surface storage, as well as conjunctive use/groundwater banking.

The CALFED agencies believe that the Phase I process guided the identification of a reasonable range of solution alternatives which, together with a no action/no project alternative, will now undergo further detailed analysis and environmental review during the following

Program phases. The Phase II process will include refinement of the alternative components, development of strategies for implementing the alternatives; and, preparation of a joint Programmatic EIR/EIS to identify impacts and mitigation associated with various alternatives. The primary purpose of the Programmatic EIR/EIS is to inform decision-makers and the public on the impacts alternatives could have on both the human and the natural environment and to evaluate how well alternatives meet the project purposes. This evaluation will include a thorough discussion of the interrelated and cumulative consequences of the alternatives.

The mission of the CALFED Bay-Delta Program is to develop a long-term comprehensive plan that will restore ecological health and improve water management for beneficial uses of the Bay-Delta system. The undersigned agencies affirm their commitment to the CALFED Bay-Delta Program, completing a Programmatic EIR/EIS, and working cooperatively to solve the problems of the Bay-Delta system.

Signed:

Department of the Interior	California Resources Agency
U.S. Bureau of Reclamation	California Department of Fish and Game
U.S. Fish and Wildlife Service	California Department of Water Resources
U.S. Environmental Protection Agency	California Environmental Protection Agency
National Marine Fisheries Service	State Water Resources Control Board

E-033910

Purpose and Need

INTRODUCTION

Background

The San Francisco Bay/Sacramento-San Joaquin Delta (Bay-Delta) estuary is the largest estuary on the west coast of North and South America. A highly dynamic and complex environment supporting a diverse and productive ecosystem, the Bay-Delta estuary is a significant state, national, and international resource.

Within the Bay-Delta estuary, approximately 40% of the freshwater runoff from California mixes with water from the Pacific Ocean. The bulk of the freshwater supply comes from the watersheds of the Sacramento and San Joaquin Rivers. The estuary contains approximately 70,000 acres of critical wetlands, including the largest remaining brackish marsh in the United States, and supports 120 species of fish. As the major juncture for salt- and freshwater habitats along California's coast, the area is crucial to the life cycles of a large proportion of the state's anadromous fish. It is also a critical link along the Pacific Flyway for wintering and nesting migratory waterfowl.

In addition to its ecological importance, the Bay-Delta estuary serves as the primary hub of California's water supply system, providing water for both agricultural and urban uses. The estuary receives the bulk of its fresh water supply from the Sacramento and San Joaquin Rivers, and provides domestic and industrial water supplies for two-thirds of the state's population and agricultual irrigation water for about 200 different crops in the Delta and San Joaquin Valley.

Given this importance, the Bay-Delta estuary has been the focus of competing interests - economic, ecological, urban and agricultural. Numerous efforts have been made to address the Bay-Delta problems but, the issues are complex and interrelated and many continue unresolved.

Organizational History and Structure of the CALFED Bay-Delta Program

The CALFED Bay-Delta Program (Program) was established in May 1995 and is one element of CALFED, a consortium of five state and five federal agencies with management and regulatory responsibilities in the Bay-Delta estuary.

At the state level, these agencies include the California Resources Agency, Department of Water Resources, Department of Fish and Game, California Environmental Protection Agency and State Water Resource Control Board. At the federal level, participating agencies include the

U.S. Department of Interior, Bureau of Reclamation, Fish and Wildlife Service, Environmental Protection Agency and the National Marine Fisheries Service. The U.S. Army Corps of Engineers also participates as a cooperating agency in the preparation of the Program's programmatic environmental impact statement/ report.

CALFED provides policy direction to the Program. It was formed as part of the Framework Agreement signed in June 1994 by California Governor Pete Wilson and by Bruce Babbitt, Secretary of the U.S. Department of Interior. As part of this Framework Agreement, the state and federal governments pledged to work together to formulate water quality standards to protect the Bay-Delta estuary, coordinate State Water Project (SWP) and Central Valley Project (CVP) operations and develop a long-term Bay-Delta solution.

Impetus to forge this long-term solution came at the state level in December 1992 with formation of the Water Policy Council and the Bay Delta Oversight Council, an advisory group to the Water Policy Council. The following year, in September 1993, the Federal Ecosystem Directorate was created at the federal level to coordinate federal resource protection and management decisions for the Bay-Delta.

In December 1994, an agreement- the Bay-Delta Accord- was signed by state and federal regulatory agencies, with cooperation of diverse interest groups. This accord set out integrated, water quality standards, and created a state/federal coordination group to better integrate the SWP and CVP. The Program is charged with responsibility for the third issue; development of a long-term solution.

CALFED Bay-Delta Program Planning Process

The Program is conducting a three-phase cooperative effort that will determine and implement the most appropriate strategy and actions necessary to improve water quality, restore health to the Bay-Delta's ecosystem, provide water for a variety of beneficial uses, and minimize the vulnerability of the Delta's levees and channels.

- The first phase, identifies solution alternatives to be analyzed in Phase II .
- The second phase includes: refinement of the Phase I alternative components; development of strategies for implementing the components; and a broad environmental review to identify the impacts of various alternatives. All alternatives analyzed in the Programmatic EIR/EIS are based upon their ability to meet the Program's goals and objectives and the six solution principles.
- The third phase of the Program includes project specific environmental review of individual components of the recommended alternative. Implementation of these components would follow in a staged fashion over several years.

The Program uses a two-tiered geographic scope to identify problems and develop solutions. The first tier identifies the geographic problem scope as being the legally defined

Delta, Suisun Bay (extending to the Carquinez Strait), and Suisun Marsh. For the remainder of this chapter, this geographic problem area will be called the "Bay-Delta system". The Program will address problems that exist within these boundaries or are closely linked to this area and related to water management and beneficial economic and environmental water use.

The second tier of the geographic scope of possible solutions to these problems encompasses any action that can be implemented by the CALFED agencies or can be influenced by them to address the identified problems, regardless of whether its implementation takes place within the problem area. Thus, the geographic scope for solutions includes the Central Valley watershed, the Southern California water system, and the Pacific Ocean.

PURPOSE AND NEED

The purpose of the CALFED Bay-Delta Program is to develop and implement a long-term comprehensive plan that will restore ecological health and improve water management for beneficial uses of the Bay-Delta system. To practicably achieve this program purpose, CALFED will concurrently address problems of the Bay-Delta system within four critical resource categories: ecosystem quality, water quality, water supply reliability, and system integrity. Important physical, ecological, and socioeconomic linkages exist among the problems and possible solutions in each of these categories. Accordingly, a solution to problems in one resource category cannot be pursued without addressing problems in the other resource categories.

Achieving the overall purpose requires satisfactorily addressing the following objectives:

Ecosystem Quality

Improve and increase aquatic and terrestrial habitats and improve ecological functions in the Bay-Delta to support sustainable populations of diverse and valuable plant and animal species;

A. Improve and increase aquatic habitats so that they can support the sustainable production and survival of native and other desirable estuarine and anadromous fish in the estuary.

1. Increase amount of high quality shallow riverine habitat to allow sustainable fish spawning and early rearing.
2. Increase amount of high quality shaded riverine habitat to allow the growth and survival of sustainable populations of estuarine resident and anadromous fish in the estuary.
3. Increase amount of quality tidal slough habitat containing emergent and submerged vegetation to support the fish production capacity of the Delta.
4. Increase amount of high quality estuary entrapment/null zone habitat to support sustainable fish populations in the Bay-Delta system.
5. Provide sufficient transport flows at the proper times to move eggs, larvae, and juvenile fish from spawning habitats to nursery habitats in the Delta and Bay.

6. Reestablish appropriate upstream and downstream movement of anadromous and estuarine fish.
7. Improve the productivity of the Bay-Delta aquatic habitat food web to support sustainable populations of desirable fish (and other) species.
8. Reduce concentrations of toxic constituents and their bioaccumulation to eliminate their adverse effects on populations of fish and wildlife species.

B. Improve and increase important wetland habitats so that they can support the sustainable production and survival of wildlife species.

1. Increase the amount of high quality brackish tidal marsh habitat in the Bay-Delta system to better support sustainable populations of native wildlife species.
2. Increase the amount of high quality freshwater marsh habitat to better support sustainable populations of native wildlife species in the Delta.
3. Increase the amount of high quality riparian woodland habitat in the Delta to better support sustainable populations of native wildlife populations.
4. Increase the amount of breeding waterfowl habitat to better support sustainable populations of dabbling ducks.
5. Increase the amount of wintering wildlife habitat for foraging and resting to better support sustainable populations of wintering waterfowl.
6. Increase the amount of managed permanent pasture habitat for to better support wintering crane populations.
7. Increase flood plains and associated riparian habitat to improve diversity and sizes of fish and wildlife populations.

C. Increase population health and population size of Delta species to levels that assure sustained survival.

1. Contribute to the recovery of threatened, endangered or species of special concern.
2. Increase populations of economically important species.
3. Increase populations of prey or food species.

Water Supply Reliability

Reduce the mismatch between Bay-Delta water supplies and current and projected beneficial uses dependent on the Bay-Delta system.

A. Reduce the conflict among beneficial water users and improve the ability to transport water through the Bay-Delta system.

1. Maintain adequate Bay-Delta system supplies to meet the existing and future short- and long-term in-Delta beneficial use needs.
2. Improve Bay-Delta system export water supply and timing to help meet reasonable existing and future short-term and long-term needs.
3. Improve the adequacy of Bay-Delta water to meet short-and long-term expected

needs for delta outflow (see Ecosystem Quality section).

B. Reduce the uncertainty of Bay-Delta system water supplies to help meet short- and long-term needs as shown below:

1. Improve the reliability of the Bay-Delta system by reducing the vulnerability of the levees that protect it (see System Integrity section).
2. Improve the predictability of the water supply available from the Bay-Delta system from season to season and from year to year.

Water Quality

Provide good water quality for all beneficial uses, including exported drinking water, agricultural uses (both in-Delta and exported), industrial uses, recreational in-Delta uses, and aquatic habitats of the Bay-Delta.

A. Provide good water quality in delta water exported for drinking water needs.

1. Reduce the level of water quality parameters of concern to human health in water supply or treat to reduce concern.
2. Reduce the water quality parameters that cause aesthetic effects, in particular concerning taste, odor and appearance in water supply.
3. Minimize the cost of treating Delta water and continue to meet the existing drinking water quality standards.
4. Minimize the fluctuation of raw water quality to improve water treatment plant operation.
5. Improve raw water quality and/or treatment to comply with stricter future drinking water regulations.

B. Provide good Delta water quality for agricultural use.

1. Improve or manage water quality to maintain or improve agricultural economic productivity by reducing water quality contaminants that reduce crop productivity on lands receiving Delta water, reduce cropping choices, or increase costs.
2. Improve water quality or recommend change in irrigation technology to minimize operational difficulties.

C. Provide good Delta water quality for industrial use.

1. Reduce industrial treatment and/or production costs.
2. Minimize the fluctuation of raw water quality to improve industrial plant operations.

D. Provide good Delta water quality for water recreational use within the Delta.

1. Reduce health risk to recreationists.
2. Improve aesthetic conditions in the Delta, in particular taste, odor and appearance.

E. Provide improved Delta water quality for environmental needs. (see Ecosystem Quality section)

System Integrity

Reduce the risk to land uses and associated economic activities, water supply, infrastructure, and the Bay-Delta ecosystem from catastrophic breaching of Delta levees.

A. Manage the risk to existing land use, associated economic activities, and infrastructure from gradual deterioration of Delta conveyance and flood control facilities and catastrophic inundation of Delta islands.

1. Manage the risk of reduction of agricultural productivity and damage to infrastructure from seepage and overtopping of the levees. Manage subsidence of the Delta island peat soils and foundations which places additional pressure on surrounding levees and increases the risk of failure.
2. Manage the risk of long-term loss of agricultural productivity and infrastructure which can result from sudden catastrophic inundation.

B. Manage the risk to water supply facilities and operations in the Delta from catastrophic inundation of Delta islands.

1. Manage the risk of interruption of in-Delta water supply which can result from sudden catastrophic island inundation and the resultant salinity intrusion. (see Water Supply section).
2. Manage the risk of interruption of export water supply which can result from sudden catastrophic island inundation and the resultant salinity intrusion. (see Water Supply section).

C. Manage the risk to water quality in the Delta from catastrophic inundation of Delta islands.

1. Manage the risk of degradation of in-Delta water quality which can result from sudden catastrophic island inundation and the resultant salinity intrusion. (see Water Quality section).
2. Manage the risk of degradation of export water supply which can result from sudden catastrophic island inundation and the resultant salinity intrusion. (see Water Quality section).

D. Manage the risk to existing Delta ecosystem from gradual deterioration of Delta conveyance and flood control facilities and catastrophic inundation of Delta islands.

1. Manage the risk of reduction of ecosystem productivity and damage to valuable habitat which can result from seepage, erosion, and overtopping of levees. Manage subsidence of the Delta island peat soils and foundations providing this ecosystem productivity which places additional pressure on surrounding levees and increases the risk of failure.
2. Manage the risk of long-term loss of valuable aquatic and terrestrial habitat which can result from sudden catastrophic inundation and the resultant salinity intrusion.

A focus in early Program development was definition of a set of six "solution principles". Solution principles are the fundamental standards which will guide development and evaluation of Program alternatives to meet the objectives. The six solution principles are:

- Reduce Conflicts in the System - Solutions will reduce major conflicts among beneficial users of water.

- Be Equitable - Solutions will focus on solving problems in all problem areas. Improvement for some problems will not be made without corresponding improvements for other problems.

- Be Affordable - Solutions will be implementable an maintainable within the forseeable resources of the Program and stakeholders.

- Be Durable - Solutions will have political and economic staying power and will sustain the resources they were designed to protect and enhance.

- Be Implementable - Solutions will have broad public acceptance and legal feasibility, and will be timely and relatively simple to implement compared with other alternatives.

- Have No Significant Redirected Impacts - Solutions will not solve problems in the Bay-Delta system by redirecting significant negative impacts, when viewed in their entirety, within the Bay-Delta or to other regions of California.

The overall purpose responds to needs identified in the Framework Agreement to address the interrelated problems affecting the Bay-Delta system.

Ecosystem Quality

There is a public need to conserve and restore the Bay-Delta and associated ecosystems in order to protect and recover endangered species in accordance with the State and federal Endangered Species Acts and to restore species with economic and recreational values which are dependent upon the Delta. The decline of fish and wildlife species and their associated habitats has impacted the use of the Delta as a water management facility and has resulted in interruptions in deliveries and lack of reliability for municipal, industrial and agricultural water in the State of California.

The health of the Bay-Delta system has declined as a result of a number of factors including degradation and loss of habitat that supports various life stages of aquatic and terrestrial biota. Further, the decline in health has resulted from activities within, upstream and downstream of the Bay-Delta system. The earliest major damaging event was the unrestricted use of hydraulic mining in the river drainages along the eastern edge of the Central Valley. Habitats in Central Valley streams were degraded as channel beds and shallow areas filled with sediment. In addition, the reduced capacity of the sediment-filled channels resulted in an increase in the frequency and extent of periodic flooding. This accelerated the need for flood control measures to protect adjacent agricultural, industrial and urban lands. Levee construction to protect these lands eliminated fish access to shallow overflow areas, and dredging to construct levees eliminated tule bed habitat along the river channels.

Since the 1850's, 700,000 acres of overflow and seasonally inundated lands in the Bay-Delta system have been converted for use in agriculture, industrial and urban development. Many of the remaining stream sections have been dredged or channelized to improve navigation and to increase stream conveyance capacity to accommodate flood flows and facilitate water export.

Upstream water development and use, depletion of natural flows by local diverters, and the export of water from the Bay-Delta system, have changed seasonal patterns of inflow, reduced outflow, and diminished the natural variability of flows into and through the Bay-Delta system. Facilities constructed to support water diversions (upstream, in-Delta and export), cause straying or direct losses of fish (e.g., through unscreened diversions) and can increase exposure of juvenile fish to predation. Entrainment and removal of substantial quantities of food-web organisms, eggs, larvae, and young fish further exacerbate the impacts of overall habitat decline.

Habitat alteration and water diversions are not the only factors that have affected ecosystem health. Water-quality degradation caused by pollutants and increased concentrations of substances, such as selenium, may also have contributed to the overall decline in the health and productivity of the Bay-Delta system. In addition, undesirable introduced species may compete for available space and food supplies, sometimes to the detriment of native species or economically important introduced species.

Water Quality

There is a public need to maintain acceptable water quality and improve degraded water quality to support viable habitat necessary for a diversity of fish and wildlife populations and to provide good quality water for municipal, industrial and agricultural use.

Good quality water is required to maintain the high-quality habitat needed in the Bay-Delta system to support a diversity of fish and wildlife populations. In addition, the Bay-Delta system is a source of drinking water for millions of Californians and is critical to the state's agricultural sector. Increasingly stringent drinking water requirements require new treatment technologies and are spurring the need for water providers to seek higher quality source waters and to address pollution in source waters. Pollutants enter the Bay-Delta system through a

variety of sources including sewage treatment plants, industrial facilities, forests, farm fields, mines, residential landscaping, urban streets, and natural sources. The pollutants, pathogens, natural organics, and salts in the Bay-Delta system waters affect, in varying degrees, existing fish and wildlife, as well as human and agricultural use of these waters. The salts entering the Bay-Delta system from the ocean and from returns upstream and within the Delta decrease the utility of Bay-Delta system waters for many purposes including the ecosystem, agriculture, and drinking water. The level of natural organics in the water (resulting primarily from the natural process of plant decay on many of the Delta peat soil islands) is of concern because of the way natural organics react with disinfection chemicals commonly used to meet public health requirements in water treatment. During this treatment process, certain disinfection by-products are created that produce carcinogenic effects on humans.

Water Supply Reliability

There is a public need to maintain and restore water supply reliability for the two thirds of California's population which receive water from the Delta, the increasing populations within California, the important agricultural industry which supplies 45 percent of the nations fruits and vegetables and to support and maintain healthy ecosystems within the Delta and throughout the State.

The Bay-Delta system provides the water supply for a wide range of instream, riparian, and other beneficial water uses. While some beneficial water uses depend on the Bay-Delta system for a portion of their water needs, others are, or have become, highly or totally dependent on Bay-Delta water supplies. As water use and competition among uses has increased during the past several decades, conflicts have increased among users of Bay-Delta water. Heightened competition for the water during certain seasons or during water-short years has magnified the conflicts.

Water flow and timing requirements have been established for certain fish and wildlife species with critical life stages dependent on freshwater flows. These requirements have reduced water supplies and flexibility to meet the quantity and timing of water delivered from the Bay-Delta system. Water suppliers and users are concerned that additional restrictions, if needed, to protect species, would increase the uncertainty and further reduce the availability of Bay-Delta system water for agricultural, industrial and urban purposes.

Delta levees and channels may fail because of decreasing levee stability, earthquakes, sea level rise, or overtopping during floods. Such failures in the system could result in interruptions in the quality and availability of water for beneficial uses in the Delta or water transport across the Bay-Delta system for out of Delta use.

System Integrity

There is a public need to maintain flood control system integrity within the Delta to protect public and private property, agriculture and ecosystems within the Delta, to help maintain

water quality for municipal, industrial and agricultural water users, to allow water to move through the Delta and for the Delta to function as a water management facility.

Levees were first constructed in the Sacramento-San Joaquin Delta during the late 1800s when settlers began to turn tidal marshes into agricultural land. Over time, both natural settling of levees and shallow subsidence of Delta island soils resulted in a need to increase levee heights to maintain protection. There is a concern that this increased height, coupled with poor levee construction and inadequate maintenance, makes Delta levees vulnerable to failure, especially during earthquakes or floods. Failure of Delta levees can result in flooding of Delta farmland and wildlife habitat. If a flooded island is not repaired and drained, the resulting large body of open water can expose adjacent islands to increased wave action and possible levee erosion. Levee failure on specific islands can have impacts on water supply distribution systems such as the Mokelumne Aqueduct. Similarly, levee failure on key Delta islands can draw salty water up into the Delta, as water from downstream rushes to fill the breached island. This would be of particular concern in low-water years when less fresh water would be available to repel the incoming salt water. Such a failure could result in an interruption of water supply for both urban and agricultural users and degradation of water quality and aquatic habitats.

The complex array of agencies with planning, regulatory and/or permitting authorities over levees makes rehabilitation and maintenance efforts difficult. Regulatory measures that protect endangered species and critical habitat sometimes conflict with and prolong levee rehabilitation and maintenance work.

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